

# ***RM CoolClamp Electronically Cooled Universal Cassette Clamp***

INHECO article number: 7900100  
LEICA article number: 14 0502 46537



## **Operating Manual**

Revision status V1.1

July 2011

Always keep this manual with the instrument.  
Read carefully before working with the instrument.



INHECO GmbH reserves the right to modify its products in order to improve their quality. These modifications are usually not documented.

This operating manual and the information contained in it have been compiled according to the best of our knowledge. INHECO GmbH assumes no liability in the event of printing errors or damage that is caused by printing errors.

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## This manual belongs to

To be filled out by the customer:

Series:	_____
Serial number.	_____
Year of manufacture:	_____
Order number:	_____



Inventory number	_____
Location of instrument setup	_____

## Significance of this Operating Manual

This operating manual is part of the *RM CoolClamp* and must

- ⇒ remain at the *RM CoolClamp* until its final destruction.
- ⇒ be passed on if the *RM CoolClamp* is sold or lent.

Please contact the manufacturer in the event that you do not understand the operating manual or portions of it.

Your opinion regarding the operating manual gives us valuable insights into how we can continue to serve you best. Please do not hesitate to send us your remarks; see the address or telephone numbers on page 4.

The safety instructions must be read with the greatest care and attentiveness. They must be understood and observed in order to ensure safe handling of the instrument.

Insufficient or lacking knowledge of the contents of the operating manual relieves INHECO GmbH of liability. Therefore the operator should request an orientation from the distributor, Leica Biosystems Nussloch GmbH.

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# 1 Symbols in the Text and Their Meanings



Notice: Warning! Safety hazard!



Warning of a potential hazard with a low risk of injury. This symbol also warns you of property damage.



This symbol indicates useful information for installation, etc.



This arrow is for indicating steps and bullet points.



## 2 Safety Notes



### General use

The *RM CoolClamp* complies with the current technical requirements. The manufacturer has placed the greatest value on user safety.

The following rules apply for the user:

- ⇒ Rules for accident prevention
- ⇒ General rules for technical safety
- ⇒ The respective specific directives of the EU and other countries

**General use includes handling according to the operating manual.**



- ⇒ Operation of this unit is intended only for dry ambient conditions without precipitation of liquids.



- ⇒ Defective instruments must not be used.



- ⇒ It must be possible for the user to shut off the power supply to the instrument via the power supply unit instantly, if necessary.



- ⇒ The following applies in general: Handling specimen head or knife / blade holder, always lock handwheel in place. Release locking mechanism only for sectioning and use knife guard



- ⇒ Failure to adjust the force balance may result in injury while working



- ⇒ The unit must not be operated in rooms with danger of explosion.



- ⇒ The RM CoolClamp must be operated only in the installation orientation and position prescribed for it.



- ⇒ It must be ensured that no liquids ingress into the unit.



- ⇒ The instrument may be operated indoors only.



To keep the thermomechanical stress on the TEC as minimal as possible, the RM CoolClamp should be switched on only once per day and then remain in operation.

### Who is permitted to operate this unit?

Only instructed and trained personnel are permitted to operate this unit.





## Intended use

The *RM CoolClamp* is an electric cooling specimen holder for the universal cassettes and the paraffin-embedded specimens in the cassettes. It is attached with the specimen holder to the rotary microtomes of the RM22/23.. series. Any other use is improper and therefore not permitted.

## Technical modifications

- ⇒ For safety reasons, no technical modifications to this instrument are permitted. Any change or modification that the manufacturer has not approved causes the warranty to be voided.
- ⇒ Original parts are specially designed for the *RM CoolClamp*. Parts from other manufacturers have not been tested and therefore have not been approved and permitted by INHECO GmbH.
- ⇒ No liability shall be accepted for any use other than the intended use.

## Biosafety in the laboratory environment

When using the *RM CoolClamp* in a laboratory environment with biosafety, the user is responsible for labeling the *RM CoolClamp* according to the WHO Laboratory Biosafety Manual (ISBN 92 4154650 6). In addition, when using the *RM CoolClamp* the user is responsible for adhering to the rules and regulations depending on the biosafety level with respect to the WHO Laboratory Biosafety Manual.

The safety rules and regulations in force for the respective lab must be monitored constantly while work is being carried out with the unit.

## Malfunctions

- ⇒ Report any malfunctions that occur to the person responsible for the instrument immediately.
- ⇒ Make sure that the unit has been secured against misuse and abuse.
- ⇒ Any safety-related parts that have been removed must be reattached and checked prior to instrument setup.

## Servicing the *RM CoolClamp*

The unit is not intended to be serviced. Servicing is accomplished by replacement. No repairs may be carried out by the user.

## Disposing of the unit

Dispose of the unit in accordance with the respective environmental directives of the respective country.

In the event of contamination, comply with the safety instructions.  
The *RM CoolClamp* is RoHS-compliant.

## 3 Instrument Setup

### Standard delivery

Prior to instrument setup, make sure that the shipment is complete and no part is damaged. The following components should be included in each shipment:

- ⇒ *RM CoolClamp*
- ⇒ Power pack with EU, UK, USA and Australia adapters
- ⇒ Cable holders for attaching to the microtome (not shown in the figure)
- ⇒ Operating manual as a book with 3 languages and on CD with 16 languages (not shown in the figure)



Figure 1: Standard delivery

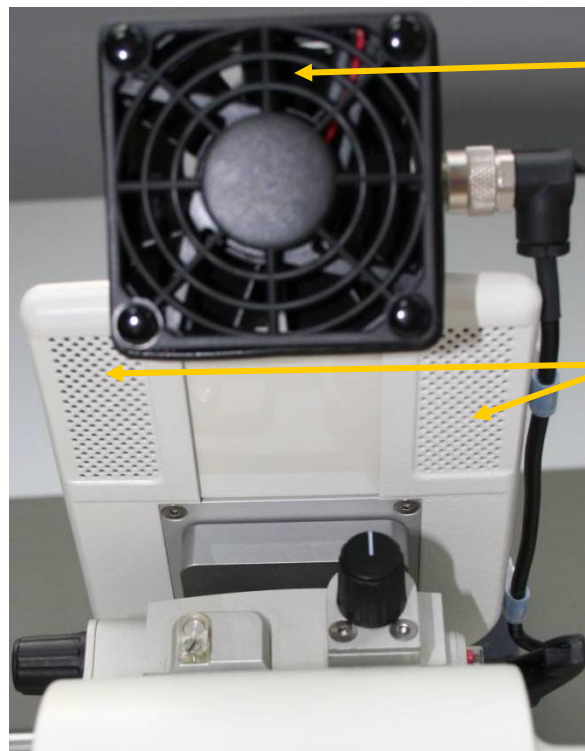


The *RM CoolClamp* can be used only together with the quick change system on the rotary microtomes of the Leica RM22/23.. series.

## General operating instructions



To prevent injury and damage, provision must be made for an unobstructed air supply; refer also to the cleaning instructions on page 17. The fan must not be blocked and the air outlet must not be obstructed. Please check before each use that the fan rotates freely. To prevent damage to the *RM CoolClamp*, the maximum permissible ambient temperature must not be exceeded; for additional information, refer to the specifications on page 18.



Ventilation  
openings, outlet

Ventilation  
openings, inlet

Figure 2: Ventilation openings



When operating the *RM CoolClamp*, condensation on the clamp occurs. This is a natural physical process.



The cable of the *RM CoolClamp* must be routed to prevent possible severing of the cable when operating the microtome. For this purpose, attach the cable holder to the microtome and then insert the cable into the cable duct.



Figure 3: Position of the cable duct



It is possible for fingers to become pinched in the specimen holder in the event of improper handling.



**Potential pinching areas**

Figure 4: Potential pinching areas



Select the appropriate adapter for the power supply. To insert or remove the corresponding adapter, the unlocking button must be pressed.

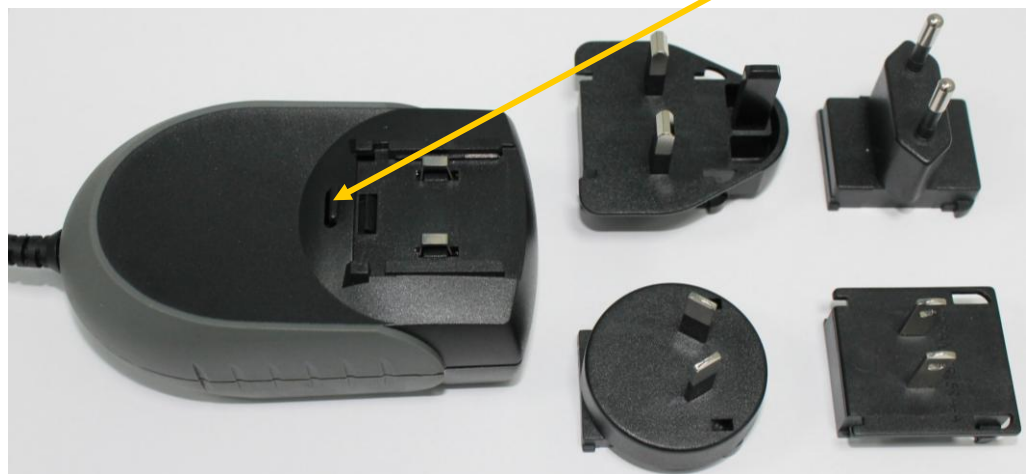


Figure 5: Power pack with EU, UK, USA and Australia adapters



## Prerequisite for sectioning the specimens

Prerequisite for using the *RM CoolClamp*:

To use it with the rotary microtomes of the RM22/23.. series, a vertical travel range of at least 70mm and an adjustable force balance are necessary.

To use the non-directional specimen fixture or the directional specimen fixture (fine or only XY), bring the specimen fixture into the zero position.

The embedded tissue samples to be sectioned must be precooled to -5 °C [+23 °F] using ice or a cooling plate prior to sectioning.

After the *RM CoolClamp*'s precooling phase of 30 min., the universal cassette can be inserted and the sections carried out.

Permitted maximum sectioning speed 420 mm/s

Section thickness range 0.5 – 600 µm

## Operating concept

Installation on a rotary microtome of the RM22/23.. series:



**The following applies in general: Handling specimen head or knife / blade holder, always lock handwheel in place. Release locking mechanism only for sectioning and use knife guard; see Safety Notes on page 8.**

For a microtome that is already configured – remove knife / blade holder with base and specimen clamp. Bring the specimen head into the rear end position (home position). Lock the handwheel in place and, where appropriate, check whether the handbrake has been activated.



We recommend working with the non-directional specimen holder fixture – if you will be working with the directional specimen fixture (XY or fine), it must be brought into the zero position.

Push the *RM CoolClamp* with adapter into the dovetail guide of the quick change system for specimen clamps and tighten it using a size 4 Allen key.

To carry out the force balancing, please observe the operating manual of the respective microtome under the Operation chapter, Fine Adjustment of the Force Balance. The specimen head must not fall into the knife after being stopped/released.



Reinstall the knife / blade holder with base and select the desired clearance angle.

Attach the cable holder to the microtome; cable holders are included in the standard delivery of the *RM CoolClamp*.

## 4 Attaching to Rotary Microtomes of the Leica RM22/23.. Series with Quick Change System



The *RM CoolClamp* is attached the same way as changing the universal cassette clamp; for additional information, also refer to the operating manual of the respective rotary microtomes.

There are two versions of the specimen holder fixture, one with and one without specimen orientation. The two versions can be interchanged.

The specimen orientation allows for simple position correction of the specimen surface when the specimen is clamped into place.

To do so, proceed as follows:

- ⇒ Move the specimen holder fixture (60) to the upper end position by turning the handwheel (12) and engage the handwheel lock.
- ⇒ To release the clamping system, turn the screw (61) counterclockwise using a size 4 Allen key.
- ⇒ Push the guide (63) of the *RM CoolClamp* (62) from the left into the specimen holder fixture (60) as far as it will go.
- ⇒ To clamp the specimen clamp, turn the screw (61) clockwise as far as it will go.

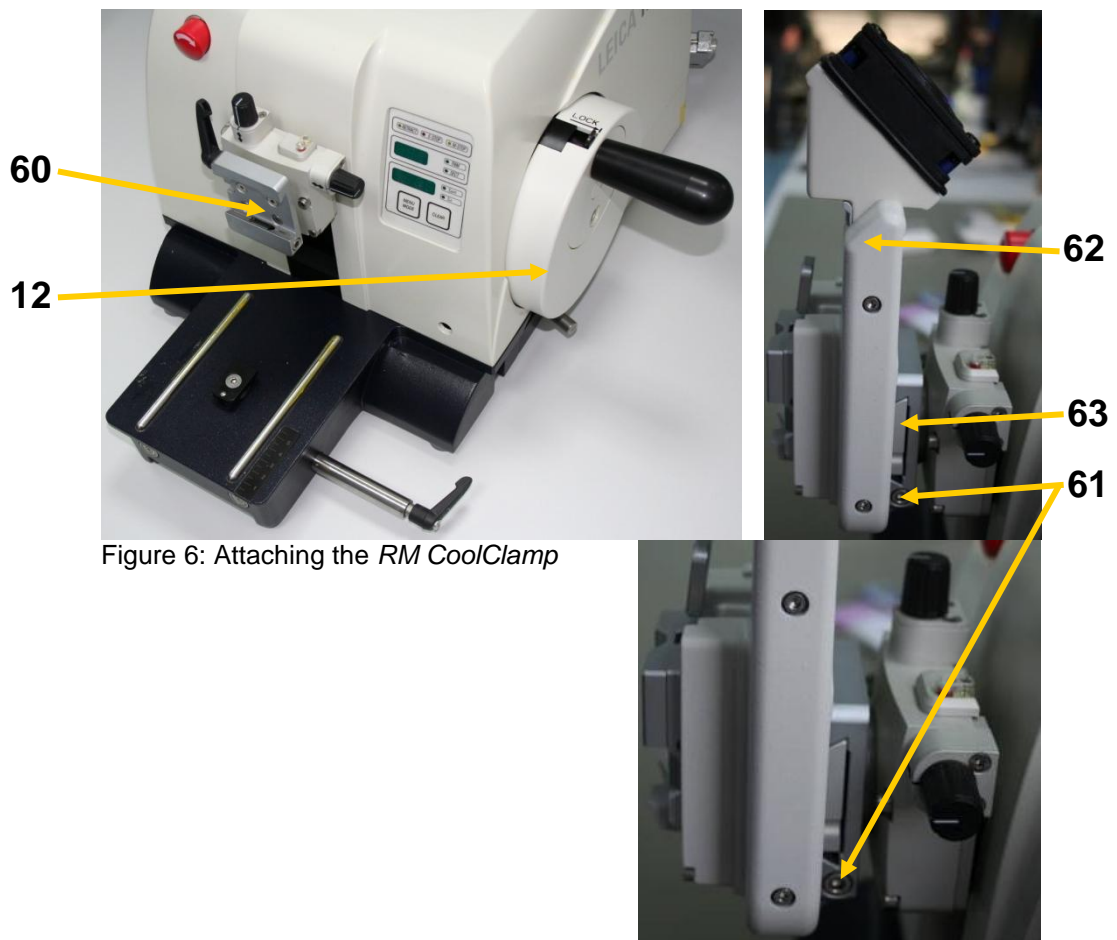


Figure 6: Attaching the *RM CoolClamp*



## 5 Fine Adjustment of the Force Balance



Installing the *RM CoolClamp* necessitates performance of a force balance; for additional information, also refer to the operating manuals of the respective rotary microtomes.

If another accessory of a different weight is mounted on the specimen head (33), you must check whether it is necessary to readjust the force balance.

Checking the correct setting:

- ⇒ Attaching a new accessory and clamping a specimen
- ⇒ Set the specimen head to half the height of the vertical travel range by turning the handwheel (Figure 7) (9:00 position).

If the specimen head remains in this exact position, the setting is correct.

If the specimen head moves, i.e. it is raised or lowered, fine adjustment is necessary.



**Failure to adjust the force balance may result in injury while working; see the Safety Notes on page 8.**

The force balance is adjusted using the screw (34), which can be accessed by removing the section waste tray on the bottom of the base plate of the microtome. Use the Allen key provided, size 5 (with handle!) for the adjustment.

- ⇒ If the specimen head moves downwards, turn the screw (34) clockwise.
- ⇒ If the specimen head moves upwards, turn the screw (34) counterclockwise.
- ⇒ Continue this procedure until the specimen head no longer moves once released.

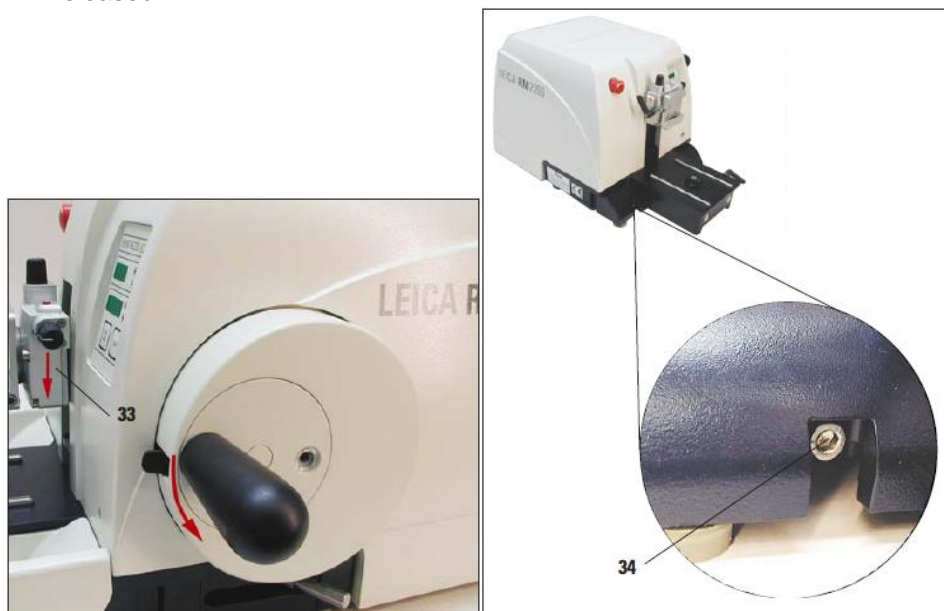


Figure 7: Fine adjustment of the force balance





## 6 Maintenance Work to be Carried Out by the User

### Cleaning

Before beginning to clean the *RM CoolClamp*, make sure that the power pack has been unplugged and all surfaces have cooled down to below +50 °C [+122 °F].



Clean the *RM CoolClamp* using paraffin remover only. Xylene and other solvents are not permitted. Wait to reactivate it until all the liquid has evaporated.

Make sure that no liquid ingresses into the instrument (ventilation slots). Use only enough liquid as is absolutely necessary. The assembly group is not suited for cleaning by dipping into liquid.

To guarantee that the *RM CoolClamp* functions flawlessly, make sure that the fan rotates and is not blocked. In addition, make sure that the ventilation openings are free before and during use; see page 11.

No cleaning in the incubator is permitted.

The *RM CoolClamp* must not be disassembled for cleaning.

### Decontamination

No units may be sent back to INHECO if contaminated. Potential harm to the recipient's health must be precluded. The most common decontamination method is disinfection using formaldehyde or ethylene oxide gas.

The surface decontamination may include wiping the surface. A solution of 70% alcohol is the conventional method for effectively removing organisms.

Make sure that no moisture gets inside the unit!

### Spare parts



Spare parts for the unit must be ordered through Leica Biosystems Nussloch GmbH. Only original parts are permitted for use.

## 7 Technical Data

Electrical data for the <i>RM CoolClamp</i>	
Operating voltage	7.5 V DC
Maximum input power	18 W

Electrical data for the power pack	
Nominal voltage	100 to 240 V AC
Nominal current	0.4 to 0.8 A maximum
Nominal frequency	47 to 63 Hz
Maximum output power	22.5 W
Output operating voltage	7.5 V DC

Additional data for the <i>RM CoolClamp</i>	
Operating temperature	+10 °C to +35 °C [+50 °F to +95 °F], relative humidity: 10% to 80% (non-condensing)
Transport and storage conditions	-10 °C to +60 °C [+14 °F to +140 °F], relative humidity: 10% to 80% (non-condensing), elevation: 0 – 2000m
Temperature difference between operating temperature and tensioning clamp	20K±3K
LxWxH with power pack plug	Dimensions: 80mm x 115mm x 205mm
Weight without power pack but with plug	0.65 kg
Weight including power pack	0.9 kg

Table 1: Technical Data

## 8 Declaration of Conformity

INHECO GmbH  
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 Germany


Confirms that the following product,

***RM CoolClamp,***

fulfills the essential requirements of the following directive(s) and their relevant part(s) of the standards and their related documents of the European Union:

Standards and date of issue	
EN 61010-1: 2004 UL 61010-1: 2004 CSA C22.2.61010.1: 2004	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements.
EN 61010-2-101: 2002	Safety requirements for in vitro diagnostics instruments.
EN 60601-1-2: 2007	Electrical equipment for medical use. EMC requirements.
EN 61326-1: 2006	Electrical equipment for measurement, control and laboratory use. EMC requirements.

This product fulfills the directives 98/79/EC for in vitro diagnostics medical devices, 2002/96/EC WEEE, and 2002/95/EC RoHS.

<b>City</b>	<i>Martinsried / Munich</i>
<b>Date</b>	<i>May, 2010</i>
	
<b>Signature</b>	
<b>Name, position</b>	<i>Günter Tenzler, Managing Director</i>

## Appendix A: Abbreviation Glossary

Abbreviation	Description
°C	Degrees Celsius
°F	Degrees Fahrenheit
K	Kelvin
LxWxH	Length x Width x Height
kg	Kilograms
Hz	Hertz [1/s]
V AC	AC voltage
V DC	DC voltage
A	Amperes
TEC	Peltier element
SW	

Table 2: Abbreviation Glossary

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## Appendix D: Document History

Version	Date	Name	Reason
1.0	05.05.2010	TBU	Created
1.1	15.07.2011	TBU	Expanded standard delivery